Statistical Bulletin

METROPOLITAN LIFE INSURANCE COMPANY

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The Increasing Chances of Survival

THE continuing decline in mortality since the turn of the century has brought better chances of survival to each successive generation of Americans. While the gains have been particularly impressive in early life, substantial progress has also been made at the ages when most men are gainfully employed and when most women bear responsibility for the care of a home and children. The improvement in survivorship for white persons at the adult ages is shown in the tables on the following page.

As may be seen in Table 1, about three fifths of the men who had attained age 20 in 1910 (the people born in 1890) have survived to celebrate their 65th birthday in 1955. The prospect of living through the main working ages of life was not quite as favorable for those born at earlier dates. Thus, of the men born in 1880, 57 percent survived from ages 20 to 65. Judging from available statistics, the corresponding figure was only about one in every two for the men born prior to 1860.

The chances of survival have also improved appreciably at midlife. For example, the proportion surviving from age 40 to 65 increased from 63 percent for the men born in 1860 to 68 percent for those born in 1890. Although the gains were smaller toward the end of productive life, at each attained age the proportion who reached age 65 was somewhat greater for the men born around 1890 than for earlier generations.

A higher proportion of women than men live to the older ages, reflecting the lower mortality normally experienced by women and the fact that they are not generally exposed to the hazards of war. Moreover, their advantage over men with respect to longevity has increased with each new generation. Sixty-eight percent of the women who attained age 40 in 1900 survived to age 65, compared to 63 percent for the corresponding group of men. Of the women reaching age 40 in 1930, 79 percent lived to celebrate their 65th birthday; the comparable figure for males was 68 percent, the record established by women three decades earlier.

The outlook for living beyond age 65 has also improved somewhat since 1900, although the gains for white men have not been continuous, as is evident from Table 2. Nevertheless, judging from past experience, most men still have many years of life ahead of them after the usual

TABLE 1—PERCENT OF PERSONS OF SPECIFIED AGE WHO SURVIVED TO AGE 65 ACCORDING TO MORTALITY ACTUALLY EXPERIENCED IN THE UNITED STATES WHITE MALES AND FEMALES, BY YEAR OF BIRTH

ATTAINED AGE	WHITE MALES				WHITE FEMALES			
	YEAR OF BIRTH							
	1860	1870	1880	1890	1860	1870	1880	1890
20	*	*	56.8	59.8	*	*	65.3	71.1
25	*	*	58.7	61.4	*	*	67.3	72.7
30	*	58.7	60.6	63.9	*	65.1	69.4	75.1
35	*	61.2	62.8	65.6	*	67.7	71.6	76.9
40	62.6	64.2	65.7	67.6	68.0	70.4	74.1	78.9
45	66.3	67.7	68.3	70.1	71.4	73.3	76.6	81.1
50	71.1	71.9	72.1	73.8	75.4	76.9	79.9	83.9
55	77.4	77.0	77.5	79.0	80.7	81.5	84.2	87.6
60	86.5	85.6	86.0	87.0	88.4	88.6	90.4	92.5

*Not available.

Note: Estimated by the Statistical Bureau of the Metropolitan Life Insurance Company from basic data in various reports by the Bureau of the Census and the National Office of Vital Statistics. The figures take into account mortality in the Armed Forces overseas during the two World Wars.

TABLE 2—PERCENT OF PERSONS AT AGE 65 WHO SURVIVED TO LATER AGES ACCORDING TO MORTALITY ACTUALLY EXPERIENCED IN THE UNITED STATES WHITE MALES AND FEMALES, BY YEAR OF BIRTH

ATTAINED AGE	WHITE MALES				WHITE FEMALES			
	YEAR OF BIRTH							
	1840	1850	1860	1870	1840	1850	1860	1870
65	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
70	77.6	79.4	78.8	79.0	80.0	81.7	82.0	83.5
75	53.9	56.6	55.3	57.0	57.7	60.4	60.9	64.7
80	32.3	31.9	32.0	35.9	36.2	36.5	38.1	44.9
85	14.8	14.2	14.4	18.4	17.5	17.4	19.1	25.8

Note: Same as for Table 1.

retirement age. Thus, of the men reaching age 65 in 1935, 79 percent survived for at least 5 years, 57 percent for at least 10 years, and more than 18 percent for at least 20 years. Women have fared even better. In fact, out of the group that attained age 65 two decades ago, five sixths lived to age 70 or beyond and one fourth lived to celebrate their 85th birthday.

Our younger generations will undoubtedly have a more favorable record of survival than persons born before the turn of the century, because death rates have been decreasing since 1900 and are likely to decline still further in the future. However, even if current levels of mortality were to remain unchanged, better than two out of every three men over 20 years of age, and more than four out of every five women at these ages, would survive beyond their 65th birthday. How much more favorable the actual record will turn out to be will depend upon many factors, among them further advances in the medical sciences and the rapidity with which they are extended to all segments of the population. Appreciable gains might also occur among men at the older ages, for whom mortality rates have thus far shown relatively little tendency to change.

These trends in longevity have important social and economic implications for our country. In the years ahead, more and more of the population will live to the age of retirement and beyond. At the same time, an increasing proportion of wives will outlive their husbands.

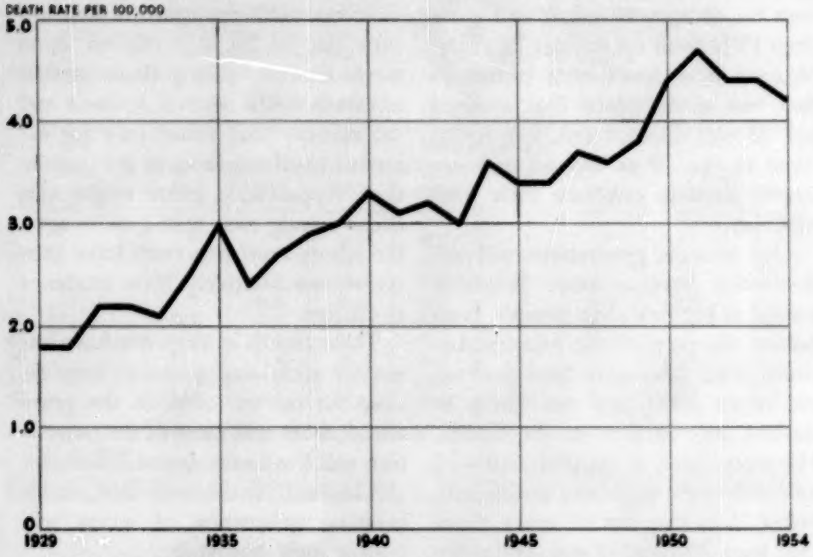
Recent Trends in Leukemia

ONLY a few decades ago deaths attributed to leukemia, a malignant disease involving the blood and blood-forming organs, were relatively rare, but they have since become an appreciable item in the total mortality from cancer. In 1953, leukemia was responsible for more than 10,000 deaths in the United States; this was about twice the mortality from cancer of the buccal cavity and three times that from skin cancer.

The upward trend in the age-adjusted death rate from leukemia during the past quarter century is shown in the chart on page 4; the data relate to the experience among persons at ages 1-74 years insured under Industrial policies in the Metropolitan Life Insurance Company. The death rate rose from 1.8 to 4.7 per 100,000 between 1930 and 1951, but then decreased somewhat. It is difficult to say what the experience of the past few years portends: whether the leukemia mortality has reached the level at which it will become stabilized, or whether the mortality will continue upward after a temporary interruption, as has happened in the past.

Both sexes among these insured experienced a rise in the mortality from leukemia, but the upward trend has been more rapid among males than among females, as may be seen

Age-Adjusted Death Rates* From Leukemia
Total Persons, Ages 1-74 Years
Industrial Policyholders, Metropolitan Life Insurance Company, 1929-1954



*Adjusted on the basis of the Standard Million Population of England and Wales, 1901. Rate for 1954 is provisional.

in the accompanying table. For white males the age-adjusted death rate more than doubled between 1930-1934 and 1950-1954, while for white females it increased about 80 percent. As a result, the excess mortality among males as compared with that among females increased from nearly 15 percent to more than 35 percent.

Each age group in both sexes recorded an increase in the leukemia death rate between 1930-1934 and 1950-1954. It is evident from the table that, in general, the largest rise occurred among children and among older people—the age groups with the highest mortality. Currently, the death rates are relatively high among preschool children, decrease to a minimum at ages 20-24, and then rise steadily with advance in age. The maximum death rates are recorded at the older ages, but the mortality at ages 1-4 is not exceeded until ages 55-64.

In 1950-1954, leukemia accounted for approximately half of all the deaths from cancer among insured children under 15 years of age. The proportion decreased fairly rapidly with advance in age to one third of the total cancer mortality at ages 15-19, to about one tenth at ages 25-34, and to only 3 percent in the age range 45-74. At every age group, leukemia has been responsible for a larger proportion of all cancer deaths in recent years than 20 years earlier.

The type of leukemia which occurs in childhood is generally different from that at the older ages. In children the disease usually appears in an acute form, and survival from onset is measured in weeks or months. Among older people the chronic form of the disease is the more common, and the duration of life from known onset averages about three years, but may be as much as 10 or more years.

The very rapid fatal course of leukemia among children is pointed up by morbidity data on the disease derived from surveys in the general population of 10 major cities during 1947 and 1948.* At ages under 15 the annual number of deaths from leukemia was two thirds of the total of all known cases at these ages, while at ages 45 and over the proportion was less than one half.

While the statistical record for leukemia makes a somber picture, it is not as dark as it appears at first glance. A large part of the long-term increase in the death rate from the disease undoubtedly reflects merely the more frequent detection of the condition through improved methods of diagnosis. This viewpoint is supported by the fact that the *recorded* death rate from leukemia is highest in those groups of the population which presumably have access to the best diagnostic facilities. Thus, the Northern and the Far Western areas of the United States, where medical facilities are the most developed, generally show the highest leukemia mortality. Similarly, studies of mortality by social class in England and Wales clearly indicate a greater leukemia death rate in the highest socio-economic groups than in the lowest.

*Preliminary summary by American Cancer Society of data from *Cancer Morbidity Series*, 1-10, National Cancer Institute.

MORTALITY FROM LEUKEMIA
WHITE PERSONS BY SEX AND AGE. INDUSTRIAL POLICYHOLDERS
METROPOLITAN LIFE INSURANCE COMPANY, 1950-1954 AND 1930-1934

AGE PERIOD (YEARS)	DEATH RATES PER 100,000				PERCENT INCREASE 1950-1954 SINCE 1930-1934	
	MALES		FEMALES			
	1950-1954	1930-1934	1950-1954	1930-1934	MALES	FEMALES
1-74*	5.2	2.4	3.8	2.1	117	81
1-4	6.9	3.7	5.7	2.8	86	104
5-9	3.9	2.2	3.6	1.2	77	200
10-14	3.1	1.3	2.3	1.0	138	130
15-19	3.1	2.1	1.7	1.2	48	42
20-24	1.7	1.2	1.5	.9	42	67
25-34	2.3	1.2	1.8	1.4	92	29
35-44	3.2	2.0	2.7	1.8	60	50
45-54	6.7	3.6	5.1	3.5	86	46
55-64	14.1	5.9	9.6	5.4	139	78
65-74	28.0	6.6	17.0	6.5	324	162

*Adjusted on the basis of the Standard Million Population of England and Wales, 1901.

Some progress has been made in the treatment of leukemia, particularly the acute form, through the use of hormones and chemicals. Continued, intensive research on the nature of the disease and the means for its control holds out tangible hopes for the future.

Future Population Trends

THE population of the United States has been increasing steadily and is expected to continue its vigorous growth in the next two decades. Since the last census was taken five years ago, our population, including the Armed Forces overseas, has increased by approximately 13½ million and now totals more than 164½ million. If the birth rate continues at its present high level, the population of our country will pass the 200 million mark before 1970 and will exceed 220 million by 1975. Such increase in the next 20 years would be equal to the gain in the preceding third of a century.

Currently, there are almost 60,000,000 people in our country under age 20 and nearly the same number at ages 20-44; somewhat more than half that number—about 33,000,000—are in the age range 45-64, and not far from 14,000,000 are at ages 65 and over. Each of these groups will increase, with the most rapid growth expected at the younger and the older ages. By 1975, the population at ages 5-19* and at 65 and over will be about 70 percent above that in 1950, according to the Bureau of the Census projections shown in the table on page 7. At ages 45-64 the corresponding increase is expected to be about 40 percent and to exceed 25 percent at ages 20-44.

These varying rates of increase would naturally bring about a change in the age composition of the population. The proportion at ages 65 and over is expected to rise to 9.4 percent of the total population by 1975; the number then would exceed 20½ million, compared with somewhat over 12 million in 1950. It is likewise estimated that the population at the ages under 20 will constitute a somewhat greater part of the total in 1975 than in 1950. In contrast, the proportion at ages 20-44 will decrease, while that at ages 45-64 will remain virtually unchanged.

The sex ratio as well as the age composition of the population is expected to change in the years to come, as may be seen in the lowest tier of the table. Females outnumbered males for the first time in the Census of 1950, but by only 1 percent. This margin, it is estimated, will grow to 3 percent by 1975. This trend will reflect the rapid rise in the excess of females over males at the ages 45 and over. At ages 45-64, females will exceed males by more than 10 percent in 1975; at ages 65 and over, the excess will be about 40 percent.

*The projections of populations at the younger ages depend upon the future course of the birth rate. The reliability of these projections will be affected by any significant differences between the assumed future birth rates and those actually experienced.

POPULATION OF THE UNITED STATES, 1950-1975

YEAR	AGE					
	ALL AGES	Under 5*	5-19*	20-44	45-64	65 and over
	Number, in Thousands					
1950	151,179	16,196	35,023	57,028	30,661	12,271
1955	164,782	17,917	41,677	57,709	33,506	13,973
1960	177,426	17,928	49,328	57,880	36,589	15,701
1965	189,916	18,884	54,691	59,793	39,212	17,336
1970	204,222	21,351	57,197	64,833	41,956	18,885
1975	220,982	24,452	60,590	72,115	43,136	20,689
	Population Ratio, 1950=100.0					
1950	100.0	100.0	100.0	100.0	100.0	100.0
1955	109.0	110.6	119.0	101.2	109.3	113.9
1960	117.4	110.7	140.8	101.5	119.3	128.0
1965	125.6	116.6	156.2	104.8	127.9	141.3
1970	135.1	131.8	163.3	113.7	136.8	153.9
1975	146.2	151.0	173.0	126.5	140.7	168.6
	Age Distribution, Percent					
1950	100.0	10.7	23.2	37.7	20.3	8.1
1955	100.0	10.9	25.3	35.0	20.3	8.5
1960	100.0	10.1	27.8	32.6	20.6	8.9
1965	100.0	9.9	28.8	31.5	20.7	9.1
1970	100.0	10.5	28.0	31.7	20.5	9.3
1975	100.0	11.1	27.4	32.6	19.5	9.4
	Females per 100 Males					
1950	101.0	96.2	97.2	103.1	99.8	111.6
1955	101.6	96.1	96.3	102.8	103.4	116.0
1960	102.2	96.0	96.0	102.1	106.5	121.8
1965	102.7	96.0	95.8	101.1	108.6	128.0
1970	102.9	95.9	95.7	99.8	110.1	133.4
1975	103.9	95.8	95.7	98.9	110.8	137.8

*Source: 1950, from Census of Population; 1955 to 1975, projected data from Current Population Reports, P-25, No. 78, Bureau of the Census, August 21, 1953, Series A. Figures include Armed Forces overseas.

In 1954, our labor force, including the Armed Forces overseas, averaged 68 million. Under conditions of high employment the number may grow to about 72 million by 1960 and to well over 90 million by 1975. While the labor force is growing, its sex and age composition is likely to change somewhat. Women are expected to constitute an increasing part of the labor force. The ratio of females to males may be 43 to 100 in 1960 and 50 to 100 by 1975. Another change in the offing is a moderate increase in the proportion of younger people in the labor force. The proportion at ages 14-24 may show an increase from 19 percent to somewhat over 23 percent of the total between 1960 and 1975.

The West will continue to lead the country in population growth during the next decade, according to projections by the Bureau of the Census. By 1965, California with a population approaching 18 million is expected to have more inhabitants than any other State, outranking New York by a narrow margin. Very largely as a result of this rapid growth in California, the proportion of the country's population in the Pacific States may increase from 10.3 percent at present to 12.1 percent in 1965. Florida, too, is expected to continue adding large numbers to its population, and to reach the 5 million mark in about a decade.

Fewer Lives Lost in Floods

THE annual loss of life resulting from floods has been decreasing in our country. As Table 1 shows, in the 20 years 1934-1953, floods took 1,728 lives in the United States*, according to reports by the Weather Bureau; of this number 1,153 were lost in the first half of the period and 575 in the second half. Provisional data for 1954 indicate a toll of less than 50 lives, about half of which were taken by the flood in Texas last June.

For more than 15 years no single flood in the United States has killed as many as 100 people. In the period 1935-1937 there were three floods—two in the Midwest and one in the East—each of which caused more than 100 deaths. Even heavier losses were sustained prior to the period under review. For example, the Mississippi Valley flood in 1927 took 313 lives, while the Ohio River flood in 1913 claimed no less than 467 victims.

The reduction in flood fatalities was effected to a large extent by a variety of protective measures. In many parts of the country Army engineers in cooperation with State and local agencies have harnessed flood waters by the construction of reservoirs, levees, flood walls, and canals. In some areas, the rate of river flow has been modified and the actual course of rivers has been changed. Another important factor in reducing the death toll has been the increase in the extent and reliability of flood forecasting by the United States Weather Bureau, a

*Exclusive of lives lost in tidal waves.

TABLE 1—NUMBER OF DEATHS IN FLOODS, UNITED STATES, 1934-1953

YEAR	DEATHS	YEAR	DEATHS	YEAR	DEATHS
Total.....	1,728	1947.....	55	1940.....	60
1953.....	40	1946.....	28	1939.....	83
1952.....	54	1945.....	91	1938.....	180
1951.....	51	1944.....	33	1937.....	142
1950.....	93	1943.....	107	1936.....	142
1949.....	48	1942.....	68	1935.....	236
1948.....	82	1941.....	47	1934.....	88

Source: United States Weather Bureau, *Climatological Data, National Summary*, 1955.

service made possible by the cooperation of a large number of weather and river observers. Emergency measures against flood waters and the rapid evacuation of people from dangerous areas—efforts in which the American Red Cross often plays a major role—have also contributed materially.

The geographic distribution of deaths in floods during the period 1934-1953 is indicated on the map on page 10, which divides the United States into 14 Districts in accordance with the practice of the Weather Bureau. The largest loss of life occurred in the Ohio and the Missouri River systems, which accounted for about one quarter and one fifth, respectively, of the total for the country. The adjacent upper and lower Mississippi River Districts contributed an additional one ninth of the deaths. The widely separated Pacific, North Atlantic, and West Gulf Districts also suffered appreciable losses. On the other hand, the Colorado and East Gulf Districts each accounted for less than one percent of the deaths. These geographic differences reflect a variety of factors, such as the size and number of rivers, and the extent of the area and the density of its population.

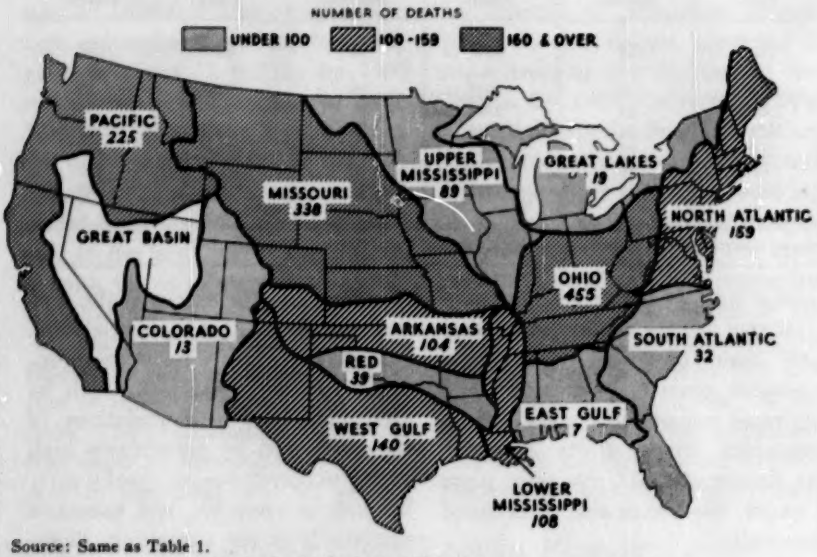
Floods frequently result from unusual weather conditions, such as abnormally large accumulations of snow followed by particularly high spring temperatures, unusually early breakup of river ice, and excessive rainfall. It is not surprising, therefore, that floods are most dangerous in the late spring and early summer, although they may occur at any time of the year. In the two decades under review, fully three fifths of the deaths in floods occurred during the period April through July, with the seasonal peak in June; the details

TABLE 2—DEATHS IN FLOODS, BY MONTH UNITED STATES, 1934-1953

MONTH	NUMBER OF DEATHS
January.....	147
February.....	107
March.....	169
April.....	212
May.....	234
June.....	386
July.....	237
August.....	109
September.....	64
October.....	17
November.....	4
December.....	42
Total.....	1,728

Source: Same as Table 1.

Number of Deaths in Floods by District
United States, 1934-1953



Source: Same as Table 1.
Note: There were no flood deaths in the Great Basin District.

are shown in Table 2. Nine of the 13 floods which took 25 or more lives were in this four-month period.

Floods usually bring in their wake not only loss of life but also the threat of disease and enormous property damage. In many years property losses are estimated to be more than $100 million and in 1951 they topped the billion dollar mark. Serious health hazards are created in stricken areas by the contamination of water and food supplies and by the breakdown of sanitary facilities. Fortunately, health agencies throughout our country have been very successful in dealing with problems of this kind.

DEATH RATES* PER 100,000 POLICYHOLDERS FROM SELECTED CAUSES
INDUSTRIAL PREMIUM-PAYING BUSINESS, WEEKLY AND MONTHLY COMBINED
METROPOLITAN LIFE INSURANCE COMPANY
FEBRUARY 1955

CAUSE OF DEATH	ANNUAL RATE* PER 100,000 POLICYHOLDERS†				
	FEBRUARY		YEAR TO DATE		
	1955	1954	1955	1954	1953
All Causes—Total	670.8	682.3	673.8	697.5	719.0
—Excluding war deaths	670.8	675.5	673.7	686.2	717.3
Tuberculosis (all forms)	8.4	10.0	8.8	10.1	11.2
Tuberculosis of respiratory system	7.8	8.9	8.0	8.7	9.8
Syphilis	2.5	3.3	2.8	3.0	2.9
Communicable diseases of childhood	.4	.4	.5	.2	.4
Acute poliomyelitis	.3	.4	.3	.3	.8
Malignant neoplasms	131.5	128.4	132.3	129.9	130.7
Digestive system	42.7	47.4	45.1	47.2	47.3
Respiratory system	17.7	16.9	16.6	16.6	15.6
Diabetes mellitus	16.9	15.9	16.9	17.1	17.3
Diseases of the cardiovascular-renal system	362.2	362.6	363.6	367.3	388.4
Vascular lesions, central nervous system	69.3	72.5	71.0	69.1	75.3
Diseases of heart	265.1	263.1	264.9	270.5	283.1
Chronic rheumatic heart disease	14.3	13.8	14.9	14.3	16.5
Arteriosclerotic and degenerative heart disease	202.2	195.9	203.3	202.2	208.6
Diseases of coronary arteries	114.8	116.8	115.4	121.2	120.1
Hypertension with heart disease	39.4	42.5	37.9	42.8	46.0
Other diseases of heart	9.2	10.9	8.8	11.2	12.0
Hypertension without mention of heart	5.2	5.7	4.9	6.2	7.0
General arteriosclerosis	7.3	5.6	6.9	6.4	6.9
Other diseases of circulatory system	6.2	4.8	5.8	4.6	4.3
Nephritis and nephrosis	9.1	10.9	10.1	10.5	11.8
Pneumonia	18.7	16.4	18.9	16.0	22.6
Influenza	2.1	2.1	1.6	2.2	6.5
Ulcers of stomach and duodenum	4.5	5.5	5.2	5.4	4.7
Appendicitis	1.7	1.0	2.0	1.0	1.5
Hernia and intestinal obstruction	3.3	4.4	3.9	4.7	3.9
Gastritis, duodenitis, enteritis, etc.	2.3	2.8	2.5	3.0	2.3
Cirrhosis of liver	11.6	10.3	10.7	10.5	11.8
Diseases of the gallbladder and biliary ducts	3.2	2.7	2.9	3.3	3.4
Complications of pregnancy, childbirth	.9	.7	.9	.8	1.5
Congenital malformations	2.9	2.9	3.2	3.0	3.4
Suicide	6.3	4.7	5.7	5.5	5.7
Homicide	2.1	2.6	2.2	2.6	3.5
Accidents—total	32.0	34.0	34.0	36.2	36.6
Motor vehicle	13.4	13.1	14.2	15.0	16.4
Home	7.1	8.7	7.4	8.4	8.3
Occupational (civilian)	2.1	2.6	2.0	2.3	3.5
War deaths—enemy action‡	—	6.8	.1	11.3	1.7
All other causes	57.0	64.2	54.9	64.1	58.1

*The rates for 1955 and 1954 are provisional.

†Persons insured under Weekly and Monthly Industrial premium-paying policies for the years 1953-1954; for 1955, includes in addition persons with Ordinary Monthly Premium policies for less than $1,000.

‡The recorded mortality from war deaths in 1954 results from the payment of claims on policyholders originally reported as missing who have subsequently been declared officially dead.

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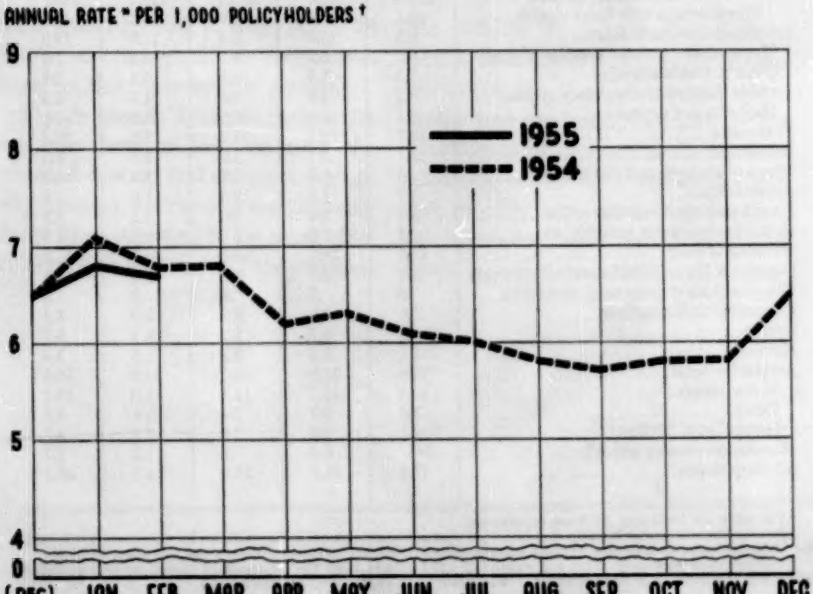
MORTALITY FROM ALL CAUSES

INDUSTRIAL POLICYHOLDERS · METROPOLITAN LIFE INSURANCE COMPANY



(DEC)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1954†	7.1	6.8	6.8	6.2	6.3	6.1	6.0	5.8	5.7	5.8	5.8	6.5
1955	6.8	6.7										

*† See page 11 for footnotes

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